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## **CAPTAIN OF THE PORT, WESTERN ALASKA NAVIGATION SAFETY ADVISORY**

### **OPERATING GUIDELINES FOR ICE CONDITIONS IN COOK INLET**

#### **I. OVERVIEW**

##### **A. INTRODUCTION**

1. The Captain of the Port (COTP), Western Alaska, through consultation with the Southwest Alaska Pilots Association (SWAPA) and Cook Inlet maritime operators, developed these operating guidelines (hereafter, *Guidelines*) for vessels operating in Cook Inlet during winter ice conditions. They represent a culmination of best practices for mitigating risk to life, property, and the environment.
2. These *Guidelines* supersede all previous Operating Guidelines/Procedures for Ice Conditions in Cook Inlet. We invite your feedback and proposed revisions. As best practices evolve and lessons are learned, we anticipate and welcome changes. If you have any questions concerning these *Guidelines*, please contact the USCG Sector Anchorage Command Center at (907) 428-4100.
3. These *Guidelines* include the following changes:
  - a. Changed the title from "Operating Procedures" to "Operating Guidelines" and changed the term "shall" to "should" throughout the document;
  - b. Emphasized vessel operators contact the USCG at anytime the condition of the vessel changes in a manner that may result in a hazardous condition (paragraph I.B.3);
  - c. Stipulated that while the *Guidelines* are in effect, self-propelled vessels transiting Cook Inlet are subject to an ice safety examination in advance of arriving at the pilot station in Kachemak Bay;
  - d. Added paragraphs II.C.6 and 7 (moved from elsewhere within the document);
  - e. Stressed that air is not considered a suitable heat medium (paragraph III.A.2); and,

- f. Clarified that the pre-arrival checklist at the end of this document applies to tug and barge operators.

## **B. IMPLEMENTATION**

1. As ice analysis, forecasts, and collective risk assessments dictate, the COTP will issue Navigation Safety Advisories to activate additional measures for ice conditions in two phases: Phase I for upper Cook Inlet and Phase II for lower Cook Inlet. The two-phased approach was established to facilitate more timely and appropriate risk mitigation strategies for ice conditions observed north and south of 60° 45' N latitude (East and West Forelands). These phases will be activated and deactivated as circumstances or industry input warrant.
2. Activation of Phase I and II measures for ice conditions is based on a number of factors, to include: observed and forecast severe sub-freezing temperatures, aerial observations, information and analysis provided by NOAA, SWAPA, and Cook Inlet maritime operators.
3. If ice conditions preclude the safe operation of vessels at berths in Nikiski, Drift River, Port Mackenzie, or the Port of Anchorage, the COTP may terminate cargo operations or close the terminal or port until conditions improve under the authority of 33 CFR §160.111. In addition, if the condition of the vessel changes in a manner that may result in a hazardous condition, or when in doubt, contact the Coast Guard.
4. All facility operators will follow the ice operations sections of their Coast Guard approved Operations Manuals, as appropriate.

## **II. STANDING GUIDELINES DURING ICE CONDITIONS**

### **A. ALL VESSELS GREATER THAN 300GT**

1. This subsection of the *Guidelines* stays in effect throughout the ice season and applies to all vessels greater than 300 gross tons transiting Cook Inlet during ice conditions.
2. The Master is ultimately responsible for the safe operation of the vessel at all times. Adherence to appropriate risk mitigation in accordance with these *Guidelines* demonstrates forehandedness on the part of the Master and is in keeping with prudent seamanship. However, it is the Master's responsibility to take all necessary steps to effectively mitigate risk in all circumstances.
3. The Master should ensure proper operation of all vessel machinery and systems in ice conditions and ambient air temperatures to -40 degrees F. This includes but is not limited to emergency fire pumps, generators, and mooring winches.

4. The Master should maintain adequate draft to keep the vessel's sea suction and propeller well below the ice to prevent ice from sliding under the vessel. If a non-tank vessel must deviate from normal ballast procedures to meet this requirement (i.e., place water ballast in a cargo hold), the Master should obtain approval from the vessel's classification society prior to transiting through Cook Inlet. In addition, the Master should confirm the watertight integrity of the vessel prior to transit.
5. The Master should ensure the vessel crew is equipped with adequate personal protection suitable for cold weather during deck operations.
6. When transiting Cook Inlet, vessels must not force ice at any time. For these purposes, "forcing ice" is defined as making way through ice that is substantial enough to significantly slow the speed of the vessel, or when the vessel slows to 50% or less of the speed being made before entering the ice. If the Master, Pilot, or both believe the vessel is forcing ice, the Master should abort the transit and navigate to safer waters until more favorable conditions are present (excluding Offshore Supply Vessels and Barge Operations).
7. Self-Propelled Vessels: While these *Guidelines* are in effect, all self-propelled vessels transiting Cook Inlet are subject to an ice safety examination in advance of arriving at the pilot station in Kachemak Bay. Vessel operators or their agents must contact the COTP at [Sector.Anchorage@uscg.mil](mailto:Sector.Anchorage@uscg.mil) or by fax: (907) 428-4114 at least 24 hours in advance of the vessel's arrival to the pilot station to determine if the vessel must undergo examination. The examination is in addition to other Coast Guard safety inspections or examinations applicable to the vessel.
8. Vessels with Internal Combustion Engines:
  - a. If fitted with a heat exchanger, the raw water must be kept at a sufficient temperature to prevent the accumulation of ice or slush ice within the system. This may be achieved by delivering a heated medium to both the primary and secondary sea chests. The medium should be continuously supplied to both sea chests from the time the vessel passes Anchor Point inbound until the time the vessel passes Anchor Point outbound. Only lines or hoses designed for their intended service will be in use.
  - b. Starting and control air tanks should remain peaked.
  - c. All vessels propelled by gas turbines should maintain the auxiliary gas turbine ready for immediate use and engagement in the event of main gas turbine failure.
9. Voyage Plans: All vessels arriving in Cook Inlet north of Homer, Alaska must file a voyage plan with the COTP by email: [Sector.Anchorage@uscg.mil](mailto:Sector.Anchorage@uscg.mil), or by fax: (907) 428-4114, no less than 24 hours prior to arrival at or abeam the Kachemak Bay pilot station. Typically, the voyage plan will include an assessment of ice conditions based on aerial observation, National Weather Service reports, and observations by maritime Pilots and

other operators. Voyage plans must advise the COTP of intentions to contract with a tug to lead the vessel through ice when needed. A *Cook Inlet Voyage Plan* template is available at: <http://homeport.uscg.mil/anchorage>.

10. Vessel operators should make environmental considerations including: impacts of the tide and currents on ice pack and water depths, expected weather during transit, and visibility assessments. To obtain forecast currents corrected for Nikiski, call the SWAPA office in Homer at (907) 235-8783, or visit the NOAA website at: <http://tidesandcurrents.noaa.gov/currents14/tab2pc4.html#144>.

11. If the weather forecast is cooling below 20 degrees and/or the ice report is marginal, vessel operators should conduct a risk reduction evaluation prior to transiting Cook Inlet.

12. All vessels (including barges) should moor in such a fashion to mitigate "worst case" ice conditions expected. Typically, this is done with the bow facing the flood tide to stem the force of ice during the stronger flood tide.

13. If ice builds up between a moored vessel (including barges) and the pier that may threatens the integrity of the mooring, the vessel should be pulled away from the berth prior to maximum current to flush away accumulated ice.

14. Vessel operators should ensure their crewmembers are familiar with their communications procedures, backup and emergency communications are established, and radio channels and phone numbers are agreed upon prior to transiting Cook Inlet.

## **B. OFFSHORE SUPPLY VESSEL OPERATIONS**

1. This subsection of the *Guidelines* stays in effect throughout the ice season and applies to all offshore supply vessels transiting Cook Inlet during ice conditions.
2. Vessels should maintain a full 24-hour crew compliment as specified in the Certificate of Inspection, regardless of voyage distance or vessel automation.
3. Vessel's hull should be of sufficient strength to force ice without impacting its seaworthiness.

## **C. TUG AND BARGE OPERATIONS**

1. This subsection of the *Guidelines* stays in effect throughout the ice season and applies to all tug and barges transiting Cook Inlet during ice conditions.
2. Where ice coverage is seven tenths, close pack coverage, or greater as published by the NOAA Ice Desk (link below), tugs attending barges should use an ice scout tug prior to commencing their transit.

NOAA Cook Inlet Sea Ice Analysis: <http://pafc.arh.noaa.gov/ice.php?img=cookice>

3. Tugs attending barges commonly maintain a notable reduction in speed while transiting through ice. Therefore, a barge transit into or out of a port of call in Cook Inlet above the East Forelands should occur during one tide cycle.
4. One tide cycle is defined as one flood or ebb tide into or out of an intended port of call above the East Forelands.
5. The lead vessel should immediately notify following vessels if the lead vessel is unable to proceed without “forcing ice.”
6. Tug and barge operators should maintain a safe distance of separation between vessels based on current and predicted ice conditions.
7. Tug and barge operators should consider vessel traffic in the operating area and exercise safety measures such as: operating at a safe speed and establishing a collision avoidance steering maneuver agreement between operators.
8. Tug and barge operators should ensure their crewmembers agree upon the initial route planning and discuss potential deviations based on changing ice conditions. Operators should use the Pre-Arrival Checklist at the end of this document in addition to pre-established safety procedures in preparation for operating in Cook Inlet ice conditions.

### **III. PHASE I - UPPER COOK INLET**

**North** of 60° 45’ N latitude (East-West Forelands)

#### **WHILE MOORED AT FACILITIES IN UPPER COOK INLET:**

##### **A. SELF-PROPELLED VESSEL OPERATIONS**

1. Vessels should maintain “underway” watches in both, engineering spaces and on the bridge when ice conditions threaten a vessel’s mooring arrangement.
2. While these *Guidelines* are in effect, steam (or other heated medium, **not** including air) should be continuously delivered to both the primary and secondary sea chests.
3. Engines, generators, propulsion systems, and winches should be in a status to ensure the most expeditious means of mitigating ice conditions by relieving strain on mooring lines, getting the vessel underway, or both as appropriate. A sufficient number of additional mooring lines should also be immediately available.

##### **B. TUG AND BARGE OPERATIONS**

1. Tugs attending barges should maintain an “underway” watch while alongside a dock.

2. Tugs should keep main engines running and ready for immediate operation, to include testing generators, pumps, and winches for operation, in order to ensure prompt action can be taken to mitigate hazardous ice conditions, relieve strain on mooring lines, or get underway.
3. A sufficient number of additional mooring lines should be immediately available.
4. Ensure assist tugs are available for transit and confirm they have no schedule conflicts.

#### IV. PHASE II - LOWER COOK INLET

**South** of 60° 45' N latitude (East-West Forelands)

##### A. SELF-PROPELLED VESSEL OPERATIONS

1. When Phase II *Guidelines* are in effect and the flood current forecast is **4 knots or greater** and the vessel is encountering ice conditions **alongside the KPL dock**, the following actions should be taken:
  - a. Discontinue all transfer operations;
  - b. Make transfer hoses ready for immediate disconnect;
  - c. Maintain a continuous watch (to include a Pilot) to ensure the most expeditious means of mitigating ice conditions by relieving strain on mooring lines, getting the vessel underway, or both as appropriate. Place engines and propulsion systems in a status to ensure the most expeditious means of mitigating ice conditions by relieving strain on mooring lines, getting the vessel underway, or both as appropriate; and,
  - d. Position a designated vessel up current of the moored vessel to serve as an ice scout. The ice scout should only work under the direction of the moored vessel's navigational watch. The ice scout should be positioned to ensure observed ice conditions are relayed to the moored vessel in a timely manner for effective risk mitigation efforts.
2. When Phase II *Guidelines* are in effect and the flood current forecast is **5 knots or greater** and the vessel is encountering ice conditions while **alongside the ConocoPhillips dock**, the following actions should be taken:
  - a. Discontinue all transfer operations;
  - b. Disconnect transfer hoses;

- c. Maintain a continuous watch (to include a Pilot) to ensure the most expeditious means of mitigating ice conditions by relieving strain on mooring lines, getting the vessel underway, or both as appropriate. Place engines and propulsion systems in a status to ensure the most expeditious means of mitigating ice conditions by relieving strain on mooring lines, getting the vessel underway, or both as appropriate; and,
  - d. Position a designated vessel up current of the moored vessel to serve as an ice scout. The ice scout should work only under the direction of the moored vessel's bridge watch. The ice scout should be positioned to ensure observed ice conditions are relayed to the moored vessel in a timely manner for effective risk mitigation efforts.
4. The Master, Pilot, or person in charge should discontinue transfer operations, disconnect hoses, and get the vessel underway any time circumstances warrant.

## **B. NIKISKI TUG/BARGE OPERATING GUIDELINES**

1. When Phase II *Guidelines* are in effect, in addition to filing a voyage plan with the COTP the following actions should be taken:
  - a. An "assist" tug should assist the attending tug and barge to the facility;
  - b. When there is no ice at the dock and the barge has successfully moored, the assist tug may act as an ice scout under the direction of the moored tug's navigational watch. The ice scout should be positioned in the best location so that current ice conditions can be relayed to the attending tug in a timely manner, allowing tow response to expedite prudent risk mitigation;
  - c. The attending tug should maintain an "underway" watch on the bridge while alongside the dock, keep main engines running and ready for immediate operation, and keep a sufficient number of additional mooring lines immediately available for use in an emergency;
  - d. When a vessel is encountering ice conditions while alongside the dock, the assist tug should reposition alongside the moored tow in a timely manner;
  - e. When the flood current forecast is **2 knots or greater** and the tow is encountering ice conditions whether underway or moored, both the attending and assist tug should keep main engines running and ready for immediate operation; and,
  - f. When the current forecast is **4 knots or greater** and the tug and barge is encountering ice conditions, all transfer operations should be discontinued and transfer hoses made ready for immediate disconnect.
2. The facility dock Person-in-Charge (PIC), Towing Vessel Operator, Tug Captain, or Barge Tankerman may determine it prudent to suspend transfer operations and disconnect

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hoses during maximum flood currents, since the ice floe is heavier on the flood tide at the Nikiski docks.

### **C. OFFSHORE SUPPLY VESSEL OPERATIONS**

1. An “underway” watch should be maintained on the bridge when ice conditions threaten a vessel’s anchoring or mooring arrangement.



P. ALBERTSON  
Captain, U.S. Coast Guard  
Captain of the Port, Western Alaska



**Pre-Arrival Checklist for Tug and Barge Operators**

Checklist Item	Master's Initials
<b>Pre docking</b>	
1. Review Port Information Book prior to arrival	
2. Check most current weather forecast 1 hour prior to docking maneuvers	
3. Check tide/current tables and advise tankerman of slack tide periods and range of tide, which must be noted in barge load plans	
4. Determine maximum allowable current velocity during docking/undocking maneuvers	
5. Check operation of mooring winches	
6. Check mooring lines/wires (compliance with facility's mooring requirements)	
7. Discuss mooring plan with crew	
8. Review load plan with tankerman	
9. Ensure tug mooring lines (double head and spring lines if moored on the hip)	
10. Ensure second generator on standby	
11. Ensure backup steering pump online	
12. Determine radio communications with dock and assisting tugs	
13. Ensure all crew required to assist with docking/undocking maneuvers	
14. Determine use of an assist tug at Master's discretion	
15. Determine mooring arrangement: north/south facing orientation	
<b>While Moored at dock</b>	
1. Maintain wheelhouse watch at all times when moored	
2. Check weather update 1 hour prior to all water slack	
3. Notify dock control pending weather concerns	
4. Monitor mooring lines/wires (check with dock control for tension indicators)	
5. Determine when to bring barge hydraulics on line. Example ½ hour before low slack	
6. Determine/manage crew leave while moored at dock	
7. Determine status of tug main engines, steering and navigation equipment before tide changes	
<b>Towed Barges - Parameters</b>	
1. Determine when head and spring lines should be doubled when operating in and around facility	
2. Consider loading barge as uniformly/flat as possible (especially one hour before low slack)	
3. Consider maneuvering barge to get tug a lee after departure to minimize slamming damage	
<p align="center"><b>Towed Barges Weather Parameters</b></p> <p>Example: S, SW 20 kts or less, seas 3' or less</p> <p>Example: SE, E, NE 35 kts or less, seas 3' or less</p> <p>Example: N, NW, W 25 kts or less, seas 3' or less</p>	

**Master's  
Initials**

**Checklist Item**

<b>Articulated Tug Barges (ATB) - Parameters</b>	
1. Determine when ATB's must be all fast at berth. Example: at least one hour prior to high water slack	
2. Determine when ATB's mooring at the berth will moor port/starboard side to, bow facing south/north	
3. Determine when tug Master will brief the assist tug regarding weather parameters for emergency departure, connection location(s) for tow hawser, if needed and departure procedures	
4. Determine when during all periods of flood tides, tug and barge must be hard coupled	
5. Determine when tug will commence coupling maneuver. Example: at least ½ hour prior to low water slack, allowing sufficient time to complete coupling prior to the change of tide	
6. Determine when during coupling maneuvers barge transfer operations are to be shut down and header valve(s) closed	
7. Determine when crew will use ballast and loading trim to minimize the number of couple/de-couple maneuvers	
8. Determine when tug will have main engines and navigational equipment online and in state of readiness for emergency departure	
<p style="text-align: center;"><b>ATB Weather Parameters</b></p> <p>Example: S, SW 15 kts or less, seas 2' or less</p> <p>Example: SE, E, NE 30 kts or less, seas 2' or less</p> <p>Example: N, NW, W 20 kts or less, seas 2' or less</p>	

<b>Emergency Departure Guidelines</b>	
1. Advise Dock Control of intent to depart	
2. Advise assist tug of intent to depart and discuss departure plan	
3. All vessel crew called out to assist with departure	
4. Secure transfer operations	
5. Secure barge valves	
6. Barge positioned to squarely spring off dock fender panels (do not allow barge to drift inside face of fender panels)	
7. Notify company of emergency departure	